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FIG.1A

CCGAGGGGGTCGGCCCGGGGGTCCCGGGGGGGGGGGAGATGGTGAAGGGGGCAGCCGTTCG 120 9 K **~** ٕڝ 回 G G Ŋ ტ IJ Ø ĿIJ A ග A Д ¥ > K G م K G Σ > G H

180 240 300 57 GCTCGGCCTATGACCACGTGCGCAAGACTCGCGTGGCCATCAAGAAGATCAGCCCCTTCG ACGTGGGCCCGCGCTACACGCAGTTGCAGTACATCGGCGAGGGCGCGTACGGCATGGTCA AACATCAGACCTACTGCCAGCGCACGCTCCGGGAGATCCAGATCCTGCTGCGCTTCCGCC 더 > بتآ Σ Д G ഗ ≻ Н A 又 G × দ্য Н ပ A > OLOYI 2 H × × ۲ > H 田 K Ω Д K ഗ

360 ATGAGAATGTCATCGGCATCCGAGACATTCTGCGGGCGTCCACCCTGGAAGCCATGAGAG

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FIG.1B

540 157 237 ATGTCTACATTGTGCAGGACCTGATGGAGACTGACCTGTACAAGTTGCTGAAAAGCCAGC 420 AGCTGAGCAATGACCATATCTGCTACTTCCTCTACCAGATCCTGCGGGGCCTCAAGTACA 480 T 177 CCTGCGACCTTAAGATTTGTGATTTCGGCCTGGCCCGGATTGCCGATCCTGAGCATGACC 600 H 197 ACACCGGCTTCCTGACGGAGTATGTGGCTACGCGCTGGTACCGGGCCCCAGAGATCATGC 660 M L 217 TGAACTCCAAGGGCTATACCAAGTCCATCGACATCTGGTCTGTGGGCTGCATTCTGGCTG 720 0 137 TCCACTCCGCCAACGTGCTCCACCGAGATCTAAAGCCCTCCAACCTGCTCATCAACACCA ഥ d \succ K H 又 ഗ Z |--| Ч П ഥ 团 Н H × L Д Ċ Ц Ŋ C D L K I C D F G L A R I A D P LYKL Ø U K ĸ Z Н > X ഗ Н ഗ Ø Ы 3 Ω × × Y Η D 드 П Ω H YVA H ᄓ Ŀ **>**ĸ ഗ Σ ပ Ή O D × ঘ Н 口 > > H <u>ග</u> Z > Ω A × Ŀ Z S U S S Н Z 田

FIG.1C

AGGAGCTCATCTTCCAGGAGACAGCACGCTTCCAGCCCGGAGTGCTGGAGGCCCCCTAGC 1020 335 P V 297 257 AGATGCTCTCTAACCGGCCCATCTTCCCTGGCAAGCACTACCTGGATCAGCTCAACCACA 780 TICTGGCCCTTGACCTGCTGGACCGGATGTTAACCTTTAACCCCAATAAACGGATCACAG H 田 H ᅜ 凶 Z Н Ω 딘 K H ĸ × H F Y L.D Q × Д М Λ . Ι Z T O O T E Q Y Y D а ෆ Z щ H ۲ų Ø × H ഥ l E P G بتآ ᆸ Σ À . <u>फ</u>िन P Y A Ø D R 됴 E Н H لتا Д [-D L L A L A Ö ᄺ 2 М لتا Z L A L ഗ H 口 Н ഥ 团

FIG.1D

7	CTAATATATAATATAGAGATATCTCTTATATCTTATATCTTATATATA
162	AGCAGAAGTGGAGCTGGGGGGGGGGGGCCCGGCCCCCTGCCTTCCCTGACCCGT
156	CGAATCCCCTCCTGTCAAAGCTGTCACTTCGCGTGCCCTCGCTGCTTCTGTGTGTG
150	TTCCCTGAAGGAACATTCCTTAGTCTCAAGGGCTAGCATCCCTGAGGAGCCAGGCCGGGC
144	GCTGAGTAGGGACTCAGGGCCATGCCCTCCCCCCTCATCTCATTCAAACCCCACCCTAGT
138	GGAATGGAAGGGTTCTGGCTGCCCCAACCTGCTGAAGGGCCAGAGGTGGAGGGTGGGGGG
132	ATCTCCCGCTGCTGCTGCGCCCTTACCTTCCCCAGCGTCCCAGTCTCTGGCAGTTCT
126	SCTTCTCCTCCCCACCCGCCCTCCCCACGGGGCCTCGGGAGCTCAGGTGGCCCCCAGTTCA
120	BAGCATGGGCCTGGCCACCTCTCTCTTTGCTGAGGCCTCCAGCTTCAGGCAGG
114	CAGACTGTTAGAAAATGGACACTGTGCCCCAGCCCGGACCTTGGCAGCCCCAGGCCGGGGTG
108	CCAGACAGACATCTCTGCACCCTGGGCCTGGCCTGCCTGC

FIG.2A

360 120 240 AACATCAGACCTACTGCCAGCGCACGCTCCGGGAGATCCAGATCCTGCTGCGCTTCCGCC 300 ACGTGGGCCCGCGCTACACGCAGTTGCAGTACATCGGCGAGGGCGCGTACGGCATGGTCA 180 09 57 GCTCGGCCTATGACCACGTGCGCAAGACTCGCGTGGCCATCAAGAAGATCAGCCCTTCG ATGAGAATGTCATCGGCATCCGAGACATTCTGCGGGCGTCCACCCTGGAAGCCATGAGAG S 2 2 > [z. Ы Σ a لتا K O U Ŋ ಬ IQILLR а A Y AIKKI 더 V K ტ Ŋ . G Σ ഥ ပ U 덴 RV L R E A Q G > I X O T ഥ G K ¥ H Ы 2 Ø 8 K ۸ <u>`</u> ک ر د A > H H Ы \succ V A Y D ≻ 9 2 Σ > م E ပ G S I ഥ

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FIG.2B

480 540 099 ATGTCTACATTGTGCAGGACCTGAGGACTGACCTGTACAAGTTGCTGAAAAGCCAGC 420 157 177 009 197 AGCTGAGCAATGACCATATCTGCTACTTCCTCTACCAGATCCTGCGGGGCCTCAAGTACA TCCACTCCGCCAACGTGCTCCACCGAGATCTAAAGCCCTCCAACCTGCTCATCAACACCA ACACCGGCTTCCTGACGGAGTATGTGGCTACGCGCCTGGTACCGGGCCCCCAGAGATCATGC CCTGCGACCTTAAGATTTGTGATTTCGGCCTGGCCCGGATTGCCGATCCTGAGCATGACC TGAACICCAAGGGCTATACCAAGTCCATCGACATCTGGTCTGTGGGCTGCATTCTGGCTG H 더 Σ Ø \succ K ഗ × H Н Z × Н Н 凹 [£] ᆸ Ŋ П М Ц ပ H Ω 公 Н A ტ ¥ H × ĸ Z > × ⊁ H H တ ഗ Ø Н 2 Д 3 3 Ω × A 又 K Н Н П 0 H Ω G H Y V A Ŀų Н K Σ Ŀ C വ H Ω Ξ × Ω Н ن ا 山 Ц Ø **|--**| H > EH > × Н G Z K × بعاً Z Ω ഗ ഗ G S Ц Z

FIG.2C

1020 1080 337 297 840 257 900 960 357 AGATGCTCTCTAACCGGCCCATCTTCCCTGGCAAGCACTACCTGGATCAGCTCAACCACA 780 277 AGGAGCGGCTGAAGGAGCTCATCTTCCAGGAGACAGCACGCTTCCAGCCCGGAGTGCTGG TTCTGGGCATCCTGGGCTCCCCATCCCAGGAGCACCTGAATTGTATCATCAACATGAAGG CCCGAAACTACCTACAGTCTCTGCCCTCCAAGACCAAGGTGGCTTGGGCCAAGCTTTTCC × ہم CCAAGTCAGACTCCAAAGCCCTTGACCTGCTGGACCGGATGTTAACCTTTAACCCCAATA [F] × × П Щ H Ŀ Z Ц > Н Z Σ Д Ω Ή × U Z Z O ο 1 Ы K Ŀ Н Ω Q H ک 3 H Ή ı٦ Н K [44 Σ Σ **>**-2 > Z H A ¥ × K H Ω Ω × E Ŀ 드 . G Н ĿЛ 又 ГŢ H Д H Ø ഗ Ø [Ŧ1 Ω ഗ Д [-ىعا Ы Н 凶 م Н Н H വ Ø Ц ഗ Д 되 × Ø [t] Ŋ K K П Н ഗു. **×** > Z Н Ω \succ S Ŋ 区 口 ß Z Н ഥ Σ × K K

FIG.21

AGGCCCCCTAGCCCAGACATCTCTGCACCCTGGGGCCTGGACCTGCCTCCTGCCTG	114
A P *	359
CCCCTCTCCCGCCAGACTGTTAGAAATGGACACTGTGCCCAGCCCGGACCTTGGCAGCC	120
CAGGCCGGGGTGGAGCATGGGCCTGGCCACCTCTCTCTTTGCTGAGGCCTCCAGCTTCA	126
GGCAGGCCAAGGCCTTCTCCCCCACCCGCCCTCCCCACGGGGCCTCGGGAGCTCAGGT	132
GGCCCCAGTTCAATCTCCGGCTGCTGCTGCGCCCTTACCTTCCCCAGCGTCCCAGTC	138
TCTGGCAGTTCTGGAAGGGTTCTGGCTGCCCCAACCTGCTGAAGGGCCAGAGGTGG	144
AGGGTGGGGGGCGCTGAGTAGGGACTCAGGGCCATGCCTGCC	150
CCCCACCCTAGTTTCCCTGAAGGAACATTCCTTAGTCTCAAGGGGCTAGCATCCCTGAGGA 156	156
GCCAGGCCGGGCCGAATCCCCTTCCCTGTCAAGCTGTCACTTCGCGTGCCCTCGCTGCTT	162
CTGTGTGTGTGAGCAGAAGTGGAGCTGGGGGGGGTGGAGGCCCGGCGCCCCTGCCACC	168
TCCCTGACCCGTCTAATATATAGAGATGTGTCTATGGCTG	172

FIG.3A

360 240 300 ACGTGGGCCCGCGCTACACGCAGTTGCAGTACATCGGCGAGGGCGCGTACGGCATGGTCA 180 57 GCTCGGCCTATGACCACGTGCGCAAGACTCGCGTGGCCATCAAGAAGATCAGCCCCTTCG AACATCAGACCTACTGCCAGGGACGTCCGGGAGATCCAGATCCTGCTGCGCTTCCGCC ATGAGAATGTCATCGGCATCCGAGACATTCTGCGGGCGTCCACCCTGGAAGCCATGAGAG S 떠 I 24 α لعا 凶 > لعا Σ ĸ Ы ᅜ Σ Д <u></u> М Ø ĸ K I S G E I Q I L L (L) ഥ × × × <u>ග</u> A Н × G > **5** L G Σ Н വ M ပ 띱 G A Ø ტ > × > Н Ø **>** × ഥ 2 Ц Ø A G П H Н K Ω × വ H Ø A K ~ > 24 A G Y C Q > Н ¥ Щ G 工 \succ Σ Ω <u>ග</u> ĸ > Д G C K Z 压引 S 团

FIG.3B

ATGTCTACATTGTGCAGGACCTGAGGACTGACCTGTACAAGTTGCTGAAAAGCCAGC 420 137 480 157 540 177 009 197 099 720 AGCTGAGCAATGACCATATCTGCTACTTCCTCTACCAGATCCTGCGGGGCCTCAAGTACA T T TGAACTCCAAGGGCTATACCAAGTCCATCGACATCTGGTCTGGGCTGCATTCTGGCTG TCCACTCCGCCAACGTGCTCCACCGAGATCTAAAGCCCTCCAACCTGCTCATCAACACCA CCTGCGACCTTAAGATTTGTGATTTCGGCCTGGCCCGGATTGCCGATCCTGAGCATGACC ACACCGGCTTCCTGACGGAGTATGTGGCTACGCGCTGGTACCGGGCCCCCAGAGATCATGC F Q Ω Σ > K ഗ × Z H П × Н Н ഥ ĿЛ Н 口 П Ŋ Ф Д ပ K L K] Z A D ¥ G Γ × > R I Y വ Н \succ ഗ Ø Д 3 3 Ω Ι 又 G L A 2 I . Q 口 ٢ A T ഥ لعا > × Σ ഥ ≻ ഗ ပ Н Ω H × V Y I V Q D ပ ഥ H Ц E 工 > Н H × Ω n L × Z G Н Z Y × Ω G S ഗ ပ Z

FIG.3C

1080 257 840 900 297 337 357 AGATGCTCTCTAACCGGCCCATCTTCCCTGGCAAGCACTACCTGGATCAGCTCAACCACA 780 277 CCAAGTCAGACTCCAAAGCCCTTGACCTGCTGGACCGGATGTTAACCCTTTAACCCCAATA 960 AACGGATCACAGTGGAGGAAGCGCTGGCTCACCCTACCTGGAGCAGTACTATGACCCGA 又 ¥ CCCGAAACTACCTACAGTCTCTGCCCTCCAAGACCAAGGTGGCTTGGGCCAAGCTTTCC TTCTGGGCATCCTGGGCTCCCCATCCCAGGAGGACCTGAATTGTATCATCAACATGAAGG × ىم ہم Z 田 Ω Н Ы Н Σ Z × × 7 z Z × Ø Н K [zı ·Н Õ Ω Z Н H 口 F ပ П Ø ഥ >-K V H P Y L R R Z Σ Ξ 1 ¥ n T × ۳ [z × ග 떠 S SKALDL A L A Ωι Ö Ŀ Д ഗ ہم لعا S L Д H Н Д ы S ഥ Y L Q [L] K Ŋ K > Н > Z വ Н م Н G Z ഗ Ŀ Ц Σ X

FIG.3D

ATCTTCCAGGAGACAGCACGCTTCCAGCCCGGAGTGCTGG 1140	I F Q E T A R F Q P G V L E 377	GGCCCCCTAGCCCAGACAGACATCTCTGCACCCTGGGGCCTGGAACAGAACTGGCAAAG 1200	270
99	印	AG	
GCT	口	CAA	
AGT	>	IGG	
CGG	Ŋ	AAC	
300	Ь	CAG	
CCA(Ø	3AA(
CTT(Ŀ	CTG	
ACG(8	399	
AGC.	Ø	rgg(
3AC	E	CCC	
3GA(ĿĴ	3CA(,
CCA(Ø	rcT	
CTT(۲	ATC	
CAT	Н	3AC	
3CT	П	ACA	
3GA(ப	:AG	
3AA(노	300	
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GGAGCGGCTGAAGGAGCTCA	闰)29:	Ø
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CGCCAGACTGTTAGAAAATGGACACTGTGCCCAGCCCGGACCTTGGCAGCCCAGGCCGGG 1320 1620 1680 TCTGGAATGGAAGGGTTCTGGCTGCCCCAACCTGCTGAAGGGCAGAGGTGGAGGGTGGGG 1560 AGGCCTTCTCCTCCCCACCCGCCCTCCCCACGGGGCCTCGGGGAGCTCAGGTGGCCCCAGT TCAATCTCCCGCTGCTGCTGCGCCCTTACCTTCCCCAGCGTCCCAGTCTCTGGCAGT GGCGCTGAGTAGGGACTCAGGGCCATGCCTGCCCCCTCATCTCATTCAAACCCCACCCT AGTITCCCTGAAGGAACATTCCTTAGTCTCAAGGGCTAGCATCCCTGAGGAGCCAGGCCG

FIG.3E

GGCCGAATCCCCTCCCTGTCAAAGCTGTCACTTCGCGTGCCCTCGCTGCTTCTGTGTGTG	1740
GTGAGCAGAAGTGGAGCTGGGGGGGGGGAGAGCCCGGCGCCCCTGCCACCTCCCTGACC 1800	1800
CGTCTAATATATAGAGATGTGTGTTTATATGTGTGTT	6

FIG.4A

360 CCGAGGGGGTCGGCCCCGGGGGTCCCGGGGGGGGGGGGAGATGGTGAAGGGGGCAGCCGTTCG 120 GCTCGGCCTATGACCACGTGCGCAAGACTCGCGTGGCCATCAAGAAGATCAGCCCCTTCG 240 AACATCAGACCTACTGCCAGCGCACGCTCCGGGAGATCCAGATCCTGCTGCGCTTCCGCC 300 ACGTGGGCCCGCGCTACACGCAGTTGCAGTACATCGGCGAGGGCGCGTACGGCATGGTCA 180 16 F H ATGAGAATGTCATCGGCATCCGAGACATTCTGCGGGCGTCCACCCTGGAAGCCATGAGAG > K ᄺ Ŀ X М ф ۲ı Σ K G Ø ĸ م ഗ <u>ს</u> A 口 团 X I П × G <u>ဗ</u> × Н > Ŋ Ø Σ ഥ A I G H G ග H Y T Q L Q Y I 떠 G > R ·V Ø × 더 Н K G H ¥ Ø ص H · 24 2 > Ø r A > ပ K Д H G 2 Ω \succ Σ > \succ Н A Ø G G S H H

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FIG.4B

099 720 237 137 157 540 177 009 197 ATGTCTACATTGTGCAGGACCTGATGGAGACTGACCTGTACAAGTTGCTGAAAAGCCAGC 420 AGCTGAGCAATGACCATATCTGCTACTTCCTCTACCAGATCCTGCGGGGCCTCAAGTACA 480 M L 217 Ø **E-**-(TGAACTCCAAGGGCTATACCAAGTCCATCGACATCTGGTCTGTGGGCTGCATTCTGGCTG Н TCCACTCCGCCAACGTGCTCCACCGAGATCTAAAGCCCTCCAACCTGCTCATCAACACCA H ACACCGGCTTCCTGACGGAGTATGTGGCTACGCGCTGGTACCGGGCCCCCAGAGATCATGC CCTGCGACCTTAAGATTTGTGATTTCGGCCTGGCCCGGATTGCCGATCCTGAGCATGACC ഥ Ø Ω \succ H K ¥ Ц ഗ Z H Н × Н [L] Н ഥ ı G М Д ပ Ц Q K K Ц G 8 Z K × П > Н တ Н \succ \succ S Ø Н K М 3 3 D L K A \succ 2 Н ıТ П Ω H H Ŋ Ø ᆈ Ŀ٦ Н ĸ Y V [교 S Σ × Ω U П H × ပ Ω Ц ĿЛ Н H Ŏ > Н H H \succ × Н > G Z O L Z Ø ہتا Y Н **>**-S S Ŋ S ں Н Z

FIG.4C

840 277 297 960 AGATECTCTCTAACCGGCCCATCTTCCCTGGCAAGCACTACCTGGATCAGCTCAACCACA 780 257 CCCGAAACTACCAGTCTCTGCCCTCCAAGACCAAGGTGGCTTGGGCCAAGCTTTTCC 900 337 TTCTGGGCATCCTGGGCTCCCCATCCCAGGAGGACCTGAATTGTATCATCAACATGAAGG K Ч × H CCAAGTCAGACTCCAAAGCCCTTGACCTGCTGGACCGGATGTTAACCTTTAACCCCAATA × Ц [24 H Н Σ Ы Н Z × Ω 口 Z Z A Ø ഥ Ω Η 3 L.D H Н T ပ A ഥ Σ **> >**-Z Σ 24 × Ц 耳 Ø Ω H L D × Ŀ × 团 G ഗ A L D L O, Щ ഥ ഗ Д Ы ודו Ы Н Ы Н S ഗ Щ 团 × Ŋ L Q 2 V ഗ Ц > Z >-Ω H S E G S Z П Σ X α ×

FIG.4D

AGGAGCGGCTGAAGGAGCTCATCTTCCAGGAGACAGCACGCTTCCAGCCCGGAGTGCTGG 1080

R L K E L I F Q E T A R F Q P G V L E 357 ഥ

AGGCCCCCTAGCCCAGACATCTCTGCACCTGGGGCCTGGAACAGAACTGGCAAAG 1140

A P

359

FIG.4E

1777 1380 1500 1680 TCAATCTCCCGCTGCTGCTGCCCCCTTACCTTCCCCAGCGTCCCAGTCTCTGGCAGT 1440 GGCGCTGAGTAGGGACTCAGGGCCATGCCTGCCCCCTCATCTCATTCAAACCCCACCCT 1560 AGTITCCCTGAAGGAACATTCCTTAGTCTCAAGGGCTAGCATCCCTGAGGAGCCAGGCCG 1620 GTGAGCAGAAGTGGAGCTGGGGGGGGGGGTGGAGCCCGGCGCCCCTGCCACCTCCCTGACC 1740 CGCCAGACTGTTAGAAATGGACACTGTGCCCAGCCCGGACCTTGGCAGCCCAGGCCGGG TCTGGAATGGAAGGGTTCTGGCTGCCCCAACCTGCTGAAGGGCAGAGGTGGAGGGTGGGG AGGCCTTCTCCTCCCCACCCGCCCTCCCCACGGGGCCTCGGGAGCTCAGGTGGCCCCAGT CGTCTAATATATATAGAGATGTGTCTATGGCTG

SMAPK3V2

61

SMAPK3V1 CCGAGGGGTCGGCCCGGGGGTCCCGGGGGAGGTGGAGATGGTGAAGGGGGCAGCCGTTCG SMAPK3V3 CCGAGGGGTCGGCCCCGGGGGTCCCGGGGGAGGTGGAGATGGTGAAGGGGGCAGCCGTTCG SMAPK3V4 CCGAGGGGTCGGCCCGGGGGTCCCGGGGGAGGTGGAGTGGTGAAGGGGGCAGCCGTTCG SMAPK3

FIG.5B

121

180

SMAPK3V1 ACGTGGGCCCGCGCTACACGCAGTTGCAGTACATCGGCGAGGGCGCGTACGGCATGGTCA SMAPK3V2 ACGTGGGCCCGCGCTACACGCAGTTGCAGTACATCGGCGAGGGCGCGTACGGCATGGTCA ACGTGGGCCCGCGCTACACGCAGTTGCAGTACATCGGCGAGGGCGCGTACGGCATGGTCA SMAPK3V3 ACGTGGGCCCGCGCTACACGCAGTTGCAGTACATCGGCGAGGGCGCGTACGGCATGGTCA SMAPK3V4 ACGTGGCCCCGCGCTACACGCAGTTGCAGTACATCGGCGAGGGCGCGTACGGCATGGTCA SMAPK3

181

240

SMAPK3V1 GCTCGGCCTATGACCACGTGCGCAAGACTCGCGTGGCCATCAAGAAGATCAGCCCCTTCG GCTCGGCCTATGACCACGTGCGCAAGACTCGCGTGGCCATCAAGAAGATCAGCCCCTTCG GCTCGGCCTATGACCACGTGCGCAAGACTCGCGTGGCCATCAAGAAGATCAGCCCCTTCG GCTCGGCCTATGACCACGTGCGCAAGACTCGCGTGGCCATCAAGAAGATCAGCCCCTTCG SMAPK3V4 GCTCGGCCTATGACCACGTGCGCAAGACTCGCGTGGCCATCAAGAAGATCAGCCCCTTCG SMAPK3V2 SMAPK3V3

FIG.5C

AACATCAGACCTACTGCCAGGGCGCTCCGGGAGATCCAGATCCTGCTGCGCTTCCGCC 241 SMAPK3V1

300

AACATCAGACCTACTGCCAGCGCACGCTCCGGGAGATCCAGATCCTGCTGCGCTTCCGCC AACATCAGACCTACTGCCAGGGCACGCTCCGGGAGATCCAGATCCTGCTGCGCTTCCGCC AACATCAGACCTACTGCCAGGGCTCCGGGAGATCCAGATCCTGCTGCGCTTCCGCC SMAPK3V4 AACATCAGACCTACTGCCAGCGCACGCTCCGGGAGATCCAGATCCTGCTGCGCCTTCCGCC SMAPK3V2 SMAPK3V3 SMAPK3

360 301

ATGAGAATGTCATCGGCATCCGAGACATTCTGCGGGCGTCCACCCTGGAAGCCATGAGAG SMAPK3V1 ATGAGAATGTCATCGGCATCCGAGACATTCTGCGGGCGTCCACCCTGGAAGCCATGAGAG ATGAGAATGTCATCGGCATCCGAGACATTCTGCGGGCGTCCACCCTGGAAGCCATGAGAG SMAPK3V2

ATGAGAATGTCATCGGCATCCGAGACATTCTGCGGGCGTCCACCCTGGAAGCCATGAGAG ATGAGAATGTCATCGGCATCCGAGACATTCTGCGGGCGTCCACCCTGGAAGCCATGAGAG SMAPK3V3 SMAPK3V4

FIG.5D

361

ATGICTACATTGTGCAGGACCTGATGGAGACTGACCTGTACAAGTTGCTGAAAAGCCAGC ATGTCTACATTGTGCAGGACCTGATGGAGACTGACCTGTACAAGTTGCTGAAAAGCCAGC ATGTCTACATTGTGCAGGACCTGATGGAGACTGACCTGTACAAGTTGCTGAAAAGCCAGC ATGTCTACATTGTGCAGGACCTGAGGACTGACCTGTACAAGTTGCTGAAAAGCCAGC SMAPK3V4 ATGTCTACATTGTGCAGGACCTGATGGAGACTGACCTGTACAAGTTGCTGAAAAGCCAGC SMAPK3V1 SMAPK3V3 SMAPK3V2

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AGCTGAGCAATGACCATATCTGCTACTTCCTCAGATCCTGCGGGGCCTCAAGTACA SMAPK3V1 AGCTGAGCAATGACCATATCTGCTACTTCCTCTACCAGATCCTGCGGGGCCTCAAGTACA SMAPK3V2 AGCTGAGCAATGACCATATCTGCTACTTCCTCTACCAGATCCTGCGGGGCCTCAAGTACA SMAPK3V3 AGCTGAGCAATGACCATATCTGCTACTTCCTCTACCAGATCCTGCGGGCCTCAAGTACA SMAPK3V4 AGCTGAGCAATGACCATATCTGCTACTTCCTCTACCAGATCCTGCGGGGCCTCAAGTACA SMAPK3

TCCACTCCGCCAACGTGCTCCACCGAGATCTAAAGCCCTCCAACCTGCTCATCAACACCA TCCACTCCGCCAACGTGCTCCACCGAGATCTAAAGCCCTCCAACCTGCTCATCAACACCA TCCACTCCGCCAACGTGCTCCACCGAGATCTAAAGCCCTCCAACCTGCTCATCAACACCA TCCACTCCGCCAACGTGCTCCACCGAGATCTAAAGCCCTCCAACCTGCTCATCAACACCA SMAPK3V4 TCCACTCCGCCAACGTGCTCCACCGAGATCTAAAGCCCTCCAACCTGCTCATCAACACCA SMAPK3V1 SMAPK3V3 SMAPK3V2

009 SMAPK3V1 CCTGCGACCTTAAGATTTGTGATTTCGGCCTGGCCCGGATTGCCGATCCTGAGCATGACC SMAPK3V2 CCTGCGACCTTAAGATTTGTGATTTCGGCCTGGCCCGGATTGCCGATCCTGAGCATGACC CCTGCGACCTTAAGATTTGTGATTTCGGCCTGGCCCGGATTGCCGATCCTGAGCATGACC SMAPK3V3 CCTGCGACCTTAAGATTTGTGATTTCGGCCTGGCCCGGATTGCCGATCCTGAGCATGACC SMAPK3V4 CCTGCGACCTTAAGATTTGTGATTTCGGCCTGGCCCGGATTGCCGATCCTGAGCATGACC 541 SMAPK3

FIG.5F

099

SMAPK3V3 ACACCGGCTTCCTGACGGAGTATGTGGCTACGCGCTGGTACCGGGCCCCCAGAGATCATGC SMAPK3V1 ACACCGGCTTCCTGACGGAGTATGTGGCTACGCGCTGGTACCGGGCCCCAGAGATCATGC SMAPK3V2 ACACCGGCTTCCTGACGGAGTATGTGGCTACGCGCTGGTACCGGGCCCCAGAGATCATGC ACACCGGCTTCCTGACGGAGTATGTGGCTACGCGCTGGTACCGGGCCCCCAGAGATCATGC SMAPK3V4 ACACCGGCTTCCTGACGGAGTATGTGGCTACGCGCTGGTACCGGGCCCCCAGAGATCATGC SMAPK3

TGAACTCCAAGGGCTATACCAAGTCCATCGACATCTGGTCTGTGGGCTGCATTCTGGCTG TGAACTCCAAGGGCTATACCAAGTCCATCGACATCTGGTCTGTGGGCTGCATTCTGGCTG TGAACTCCAAGGGCTATACCAAGTCCATCGACATCTGGTCTGTGGGCTGCATTCTGGCTG TGAACTCCAAGGGCTATACCAAGTCCATCGACATCTGGTCTGTGGGCTGCATTCTGGCTG SMAPK3V4 TGAACTCCAAGGGCTATACCAAGTCCATCGACATCTGGTCTGGGCTGCATTCTGGCTG SMAPK3V1 SMAPK3V2 SMAPK3V3 SMAPK3

FIG.5G

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AGATGCTCTCTAACCGGCCCATCTTCCCTGGCAAGCACTACCTGGATCAGCTCAACCACA SMAPK3V4 AGATGCTCTCTAACCGGCCCATCTTCCCTGGCAAGCACTACCTGGATCAGCTCAACCACA SMAPK3V1 AGATGCTCTCTAACCGGCCCATCTTCCCTGGCAAGCACTACCTGGATCAGCTCAACCACA SMAPK3V2 AGATGCTCTCTAACCGGCCCATCTTCCCTGGCAAGCACTACCTGGATCAGCTCAACCACA AGATGCTCTCTAACCGGCCCATCTTCCCTGGCAAGCACTACCTGGATCAGCTCAACCACA SMAPK3V3

840

781

TTCTGGGCATCCTGGGCTCCCCATCCCAGGAGGACCTGAATTGTATCATCAACATGAAGG SMAPK3V3 ITCIGGGCATCCTGGGCTCCCCATCCCAGGAGCACCTGAATTGTATCATCAACATGAAGG SMAPK3V2 TTCTGGGCATCCTGGGCTCCCCATCCCAGGAGCACCTGAATTGTATCATCAACATGAAGG SMAPK3V4 TTCTGGGCATCCTGGGCTCCCCATCCCAGGAGCACTGAATTGTATCATCAACATGAAGG SMAPK3V1 TTCTGG-SMAPK3

FIG.5H

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SMAPK3V3 CCCGAAACTACCTACAGTCTCTGCCCTCCAAGACCAAGGTGGCTTGGGCCAAGCTTTTCC SMAPK3V4 CCCGAAACTACCTACAGTCTCTGCCCTCCAAGACCAAGGTGGCTTGGGCCAAGCTTTTCC SMAPK3V2 CCCGAAACTACCTACAGTCTCTGCCCTCCAAGACCAAGGTGGCTTGGGCCAAGCTTTTCC CCCGAAACTACCTACAGTCTCTGCCCTCCAAGACCAAGGTGGCTTGGGCCAAGCTTTTCC SMAPK3V1 SMAPK3

096 901

SMAPK3V3 CCAAGTCAGACTCCAAAGCCCTTGACCTGGACCGGATGTTAACCTTTAACCCCAATA SMAPK3V4 CCAAGTCAGACTCCAAAGCCCTTGACCTGGACCGGATGTTAACCTTTAACCCCAATA ----CCCTTGACCTGCTGGACCGGATGTTAACCTTTAACCCCAATA SMAPK3V2 CCAAGTCAGACTCCAAAGCCCTTGACCTGCTGGACCGGATGTTAACCTTTAACCCCAATA CCAAGTCAGACTCCAAAGCCCTTGACCTGCTGGACCGGATGTTAACCTTTAACCCCAATA SMAPK3V1 SMAPK3

FIG.5

	1020
3MAPK3V1	3MAPK3V1 AACGGATCACAGTGGAAGCGCTGGCTCACCCCTACCTGGAGCAGTACTATGACCCG
MAPK3V2	SMAPK3V2 AACGGATCACAGTGG
SMAPK3	AACGGATCACAGTGGAAGCGCTGGCTCACCCTACCTGGAGCAGTACTATGACCCG
MAPK3V3	SMAPK3V3 AACGGATCACAGTGGAGGGAAGCGCTGGCTCACCCTTGGAGCAGTACTATGACCCG
MAPK3V4	SMAPK3V4 AACGGATCACAGTGG
	1021
SMAPK3V1	CGGATGAGCCAGTGGCCGAGGAGCCCTTCACCTTCGCCATGGAGCTGGATGACCTACCT
SMAPK3V2	
SMAPK3	CGGATGAGCCAGTGGCCCGAGGAGCCCTTCACCTTCGCCATGGAGCTGGATGACCTACCT
SMAPK3V3	SMAPK3V3 CGGATGAGCCAGTGGCCGAGGAGCCCTTCACCTTCGCCATGGAGCTGGATGACCTACCT

SMAPK3V4 --

FIG.53

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SMAPK3V1 AGGAGCGCTGAAGGAGCTCATCTTCCAGGAGACAGCACGCTTCCAGCCCGGAGTGCTGG SMAPK3V2 AGGAGCGGCTGAAGGAGCTCATCTTCCAGGAGACAGCACGCTTCCAGCCCGGAGTGCTGG AGGAGCGGCTGAAGGAGCTCATCTTCCAGGAGACAGCACGCTTCCAGCCCGGAGTGCTGG SMAPK3V3 AGGAGCGGCTGAAGGAGCTCATCTTCCAGGAGACAGCACGCTTCCAGCCCGGAGTGCTGG SMAPK3V4 AGGAGCGGCTGAAGGAGCTCATCTTCCAGGAGACAGCACGCTTCCAGCCCGGAGTGCTGG SMAPK3

141

1200

SMAPK3V3 AGGCCCCCTAGCCCAGACAGACATCTCTGCACCCTGGGGCCTGGAACAGAACTGGCAAAG SMAPK3V4 AGGCCCCCTAGCCCAGACAGACATCTCTGCACCCTGGGGCCTGGAACAGAACTGGCAAAG AGGCCCCCTAGCCCAGACAGACATCTCTGCACCCTGGGGCCTGGA----SMAPK3V2 AGGCCCCCTAGCCCAGACAGACATCTCTGCACCCTGGGCCTGGA--SMAPK3V1 AGGCCCCCTAGCCCAGACAGACATCTCTGCACCCTGGGGCCTGGA-

FIG.5K

	1201
SMAPK3V1	
SMAPK3V2	CGTGCCTGCCTGCCTGCCTCTGCCTGCCTGCCTG
SMAPK3	
SMAPK3V3	SMAPK3V3 AGGCAAGAGGTCACTGAGGGCCTCTGTCACCCAGGACCTGCCTG
SMAPK3V4	SMAPK3V4 AGGCAAGAGGTCACTGAGGGCCTCTGTCACCCAGGACCTGCCTCCTGCCTG

SMAPK3V1 CGCCAGACTGTTAGAAATGGACACTGTGCCCAGCCCGGACCTTGGCAGCCCAGGCCGGG SMAPK3V2 CGCCAGACTGTTAGAAAATGGACACTGTGCCCAGCCCGGACCTTGGCAGCCCAGGCCGGG CGCCAGACTGTTAGAAAATGGACACTGTGCCCAGCCCGGACCTTGGCAGCCCAGGCCGGG SMAPK3V3 CGCCAGACTGTTAGAAAATGGACACTGTGCCCAGCCCGGACCTTGGCAGCCCAGGCCGGG SMAPK3V4 CGCCAGACTGTTAGAAATGGACACTGTGCCCAGCCCGGACCTTGGCAGCCCAGGCCGGG **SMAPK3**

FIG.5L

1321

1380

SMAPK3V2 GTGGAGCATGGGCCTGGCCACCTCTCTCTTTGCTGAGGCCTCCAGCTTCAGGCCAGGCCA SMAPK3V4 GTGGAGCATGGGCCTGGCCACCTCTCTCTTTGCTGAGGCCTCCAGCTTCAGGCCAGGCCA SMAPK3

SMAPK3V1 AGGCCTTCTCCTCCCCACCGCCCTCCCCACGGGGCCTCGGGAGCTCAGGTGGCCCCAGT SMAPK3V2 AGGCCTTCTCCTCCCCACCGCCCTCCCCACGGGGCCTCGGGAGCTCAGGTGGCCCCAGT

AGGCCTTCTCCTCCCCACCGCCCTCCCCACGGGGCCTCGGGAGCTCAGGTGGCCCCAGT SMAPK3V3 AGGCCTTCTCCTCCCCACCCGCCCTCCCCACGGGGCCTCGGGAGCTCAGGTGGCCCCAGT SMAPK3V4 AGGCCTTCTCCTCCCCACCCGCCCTCCCCAGGGGCCTCGGGAGCTCAGGTGGCCCCAGT

FIG.5M

1441

1500

SMAPK3V1 TCAATCTCCCGCTGCTGCTGCGCCCTTACCTTCCCCAGCGTCCCAGTCTCTGGCAGT SMAPK3V2 TCAATCTCCCGCTGCTGCTGCGCCCTTACCTTCCCCAGCGTCCCAGTCTCTGGCAGT TCAATCTCCCGCTGCTGCTGCGCCCTTACCTTCCCCAGCGTCCCAGTCTCTGGCAGT SMAPK3V3 TCAATCTCCCGCTGCTGCTGCGCCCTTACCTTCCCCAGCGTCCCAGTCTCTGGCAGT SMAPK3V4 TCAATCTCCGGTGCTGCTGCGCCCTTACCTTCCCCAGGGTCCCAGTCTTTGGCAGT SMAPK3

SMAPK3V1 TCTGGAATGGAAGGGTTCTGGCTGCCCCAACCTGCTGAAGGGCAGAGGTGGAGGGTGGGG SMAPK3V2 TCTGGAATGGAAGGGTTCTGGCTGCCCCAACCTGCTGAAGGGCAGAGGTGGAGGGTGGGG TCTGGAATGGAAGGGTTCTGGCTGCCCCAACCTGCTGAAGGGCAGAGGTGGAGGTGGGG SMAPK3V3 TCTGGAATGGAAGGGTTCTGGCTGCCCCAACCTGCTGAAGGGCCAGAGGTGGAGGGTGGGG SMAPK3V4 TCTGGAATGGAAGGGTTCTGGCTGCCCCAACCTGCTGAAGGGCAGAGGTGGAGGGTGGGG SMAPK3

FIG.5N

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1620

SMAPK3V1 GGCGCTGAGTAGGGACTCAGGGCCATGCCTGCCCCCCTCATCTCATTCAAACCCCACCCT SMAPK3V2 GGCGCTGAGTAGGGACTCAGGGCCATGCCTGCCCCCCTCATCTCATTCAAACCCCACCT GGCGCTGAGTAGGGACTCAGGGCCATGCCTGCCCCCTCATCTCATTCAAACCCCACCCT SMAPK3V3 GGCGCTGAGTAGGGACTCAGGGCCATGCCTGCCCCCTCATCTCATTCAAACCCCACCT SMAPK3V4 GGCGCTGAGTAGGGACTCAGGGCCATGCCTGCCCCCTCATCTCATTCAAACCCCACCCT SMAPK3

62.1

1680

AGTTTCCCTGAAGGAACATTCCTTAGTCTCAAGGGCTAGCATCCCTGAGGAGCCAGGCCG AGTITCCCTGAAGGAACATTCCTTAGTCTCAAGGGCTAGCATCCCTGAGGAGCCAGGCCG AGTTTCCCTGAAGGAACATTCCTTAGTCTCAAGGGCTAGCATCCCTGAGGAGCCAGGCCG SMAPK3V3 AGTTTCCCTGAAGGAACATTCCTTAGTCTCAAGGGCTAGCATCCCTGAGGAGCCAGGCCG SMAPK3V4 AGTTTCCCTGAAGGAACATTCCTTAGTCTCAAGGGCTAGCATCCCTGAGGAGCCAGGCCG SMAPK3V1 SMAPK3V2

FIG.50

1681

1740

SMAPK3

SMAPK3V1 GTGAGCAGAAGTGGAGCTGGGGGGGGTGGAGAGCCCGGGCGCCCTGCCTCCCTGACC

SMAPK3V2 GTGAGCAGAAGTGGAGCTGGGGGGGGTGGAGGCCCGGGCGCCCCTGCCTCCCTGACC

GTGAGCAGAAGTGGAGCTGGGGGGGGTGGAGAGCCCGGCGCCCCTGCCTCCCTGACC SMAPK3

SMAPK3V3 GTGAGCAGAAGTGGAGCTGGGGGGCGTGGAGAGCCCGGCGCCCCTGCCACCTCCCTGACC

SMAPK3V4 GTGAGCAGAAGTGGAGCTGGGGGGGGTGGAGAGCCCGGGCGCCCTGCCACCTCCCTGACC

FIG.51

1801

SMAPK3V1	SMAPK3V1 CGTCTAATATATAATATAGAGATGTGTCTATGGCTG	16
SMAPK3V2	SMAPK3V2 CGTCTAATATATATAGAGATGTGTCTATGGCTG	172
SMAPK3	CGTCTAATATAAATATAGAGATGTGTCTATGGCTG	178
SMAPK3V3	SMAPK3V3 CGTCTAATATATAAATATAGAGATGTGTCTATGGCTG	183
SMAPK3V4	SMAPK3V4 CGTCTAATATATAAATATAGAGATGTGTCTATGGCTG	177

SMAPK3V2 MAAAAAQGGGGGEPRRTEGVGPGVPGEVEMVKGQPFDVGPRYTQLQYIGEGAYGMVSSAY MAAAAAQGGGGGEPRRTEGVGPGVPGEVEMVKGQPFDVGPRYTQLQYIGEGAYGMVSSAY SMAPK3V3 MAAAAAQGGGGGEPRRTEGVGPGVPGEVEMVKGQPFDVGPRYTQLQYIGEGAYGMVSSAY SMAPK3V4 MAAAAAQGGGGGEPRRTEGVGPGVPGEVEMVKGQPFDVGPRYTQLQYIGEGAYGMVSSAY SMAPK3V1 MAAAAAQGGGGGEPRRTEGVGPGVPGEVEMVKGQPFDVGPRYTQLQYIGEGAYGMVSSAY SMAPK3

SMAPK3V1 DHVRKTRVAIKKISPFEHQTYCQRTLREIQILLRFRHENVIGIRDILRASTLEAMRDVYI DHVRKTRVAIKKISPFEHQTYCQRTLREIQILLRFRHENVIGIRDILRASTLEAMRDVYI DHVRKTRVAIKKISPFEHQTYCQRTLREIQILLRFRHENVIGIRDILRASTLEAMRDVYI DHVRKTRVAIKKISPFEHQTYCQRTLREIQILLRFRHENVIGIRDILRASTLEAMRDVYI DHVRKTRVAIKKISPFEHQTYCQRTLREIQILLRFRHENVIGIRDILRASTLEAMRDVYI 61 SMAPK3V2 SMAPK3V3 SMAPK3V4 SMAPK3

FIG.6B

121

SMAPK3V1 VQDLMETDLYKLLKSQQLSNDHICYFLYQILRGLKYIHSANVLHRDLKPSNLLINTTCDL VQDLMETDLYKLLKSQQLSNDHICYFLYQILRGLKYIHSANVLHRDLKPSNLLINTTCDL VQDLMETDLYKLLKSQQLSNDHICYFLYQILRGLKYIHSANVLHRDLKPSNLLINTTCDL VQDLMETDLYKLLKSQQLSNDHICYFLYQILRGLKYIHSANVLHRDLKPSNLLINTTCDL SMAPK3V3 VQDLMETDLYKLLKSQQLSNDHICYFLYQILRGLKYIHSANVLHRDLKPSNLLINTTCDL SMAPK3V2 SMAPK3V4 SMAPK3

181

240 SMAPK3V1 KICDFGLARIADPEHDHTGFLTEYVATRWYRAPEIMLNSKGYTKSIDIWSVGCILAEMLS KICDFGLARIADPEHDHTGFLTEYVATRWYRAPEIMLNSKGYTKSIDIWSVGCILAEMLS KICDFGLARIADPEHDHTGFLTEYVATRWYRAPEIMLNSKGYTKSIDIWSVGCILAEMLS KICDFGLARIADPEHDHTGFLTEYVATRWYRAPEIMLNSKGYTKSIDIWSVGCILAEMLS KICDFGLARIADPEHDHTGFLTEYVATRWYRAPEIMLNSKGYTKSIDIWSVGCILAEMLS SMAPK3V2 SMAPK3V3 SMAPK3V4 SMAPK3

301

FIG.6C

	241
SMAPK3V1	SMAPK3V1 NRPIFPGKHYLDQLNHIL
SMAPK3V2	SMAPK3V2 NRPIFPGKHYLDQLNHILGILGSPSQEDLNCIINMKARNYLQSLPSKTKVAWAKLFPKSD
SMAPK3	NRPIFPGKHYLDQLNHILGILGSPSQEDLNCIINMKARNYLQSLPSKTKVAWAKLFPKSD
SMAPK3V3	SMAPK3V3 NRPIFPGKHYLDQLNHILGILGSPSQEDLNCIINMKARNYLQSLPSKTKVAWAKLFPKSD
SMAPK3V4	SMAPK3V4 NRPIFPGKHYLDQLNHILGILGSPSQEDLNCIINMKARNYLQSLPSKTKVAWAKLFPKSD

SMAPK3V1 --ALDLLDRMLTFNPNKRITVEEALAHPYLEQYYDPTDEPVAEEPFTFAMELDDLPKERL SKALDLLDRMLTFNPNKRITV---------AEEPFTFAMELDDLPKERL SKALDLLDRMLTFNPNKRITVEEALAHPYLEQYYDPTDEPVAEEPFTFAMELDDLPKERL SMAPK3V3 SKALDLLDRMLTFNPNKRITVEEALAHPYLEQYYDPTDEPVAEEPFTFAMELDDLPKERL -----AEEPFTFAMELDDLPKERL SMAPK3V4 SKALDLLDRMLTFNPNKRITV--SMAPK3V2 SMAPK3

FIG. 6T

361

335	359	379	379	359
SMAPK3V1 KELIFQETARFQPGVLEAP	SMAPK3V2 KELIFQETARFQPGVLEAP	KELIFQETARFQPGVLEAP	SMAPK3V3 KELIFQETARFQPGVLEAP	SMAPK3V4 KELIFQETARFQPGVLEAP
SMAPK3V1	SMAPK3V2	SMAPK3	SMAPK3V3	SMAPK3V4